State Geological Survey Division

Natural Resources Building
615 East Peabody Drive
Champaign, IL 61820
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Illinois Department
Energy and Natural Resource

June 7, 1982

Ms. Lisa Bernadini
RAS Associates
Camden, N.J. 08101

Dear Ms. Bernadini:

This letter is in response to your June 1 telephone request for information pertaining to the hydrogeology of a landfill site, located between South Roxana and Edwardsville. The specific location is about 1/4 mile west of Cahokia Creek in Section 5, Township 4 North, Range 8 West.

Let me begin with a brief summary of the hydrogeology of the area, and follow with details and supporting data. The request area is located on the edge of the bluff adjacent to the Mississippi River Valley. The surface drainage of the bluffs is expected to be towards Cahokia Creek. Most of the bluff in Section 5 is comprised of this Peoria Loess and Roxanna Silt, overlying Glassford Formation till, the base of which is Hagarstown sand and gravel. This basal sand and gravel deposit is the main aquifer in the area and can provide substantial quantities of water. Pennsylvanian shale of the Carbondale Formation forms the bedrock. I have enclosed a stratigraphic column for southwestern Illinois which covers, mainly, the pre-Pleistocene materials. Groundwater flow is expected to be to the southwest.

We have only one water well log on file at the Illinois State Geological Survey which shows the character of the subsurface deposits in Section 5. I have enclosed it along with several logs from the west half of Section 4. The State Water Survey maintains no monitoring wells in this area. As you can see from the logs, wells in this area tend to be either shallow, large diameter bored wells finished in the till, or deeper drilled wells finished in Hagarstown sand and gravel at the base of the drift.

The Geological Survey is currently doing a study of Madison County geology. A portion of one of the work maps from that study, showing the geology to a depth of 20 feet, is enclosed. Most of Section 5 is mapped as "pr 6," which designates areas that have a minimum of 6 meters of Peoria Loess and Roxanna Silt. The area labeled as (pr 3)/gfr is 3 meters of loess and silt over the Glassford Formation. These materials are found on the highlands. The "C" stands for Cahokia Alluvium, which grades into the Mississippi Valley fill deposits known as the American Bottoms. You should be able to obtain more regional geological information and

land-use planning information for this area from the Southwestern Illinois Metropolitan and Regional Planning Commission, 203 W. Main Street, Collinsville, Illinois 62234.

I have also enclosed a portion of an engineering report, written in 1977, for the Barton Landfill, located in the SE¼ of Section 5, T. 4 N., R. 8 W. This report includes boring logs, hydraulic conductivities, ion exchange capacities and water level measurements which should be useful to your study.

Finally, I am enclosing this list of publications, which you requested, and "A Guide to the Use of Illinois Topographic Maps." I hope this information proves useful to you. If I can be of any further assistance on this project, please feel free to contact me.

Sincerely,

Beverly L. Herzog
Assistant Geologist
Hydrogeology and Geophysics Section

Enclosures